

REMARKS

Claims 14-25 are pending. The Applicant respectfully requests the Examiner to reconsider and withdraw the rejections in view of the amendments to the claims and remarks presented herewith.

Rejections under 35 USC § 112

The Applicant presents amendments to the claims to address the rejections set forth by the Examiner. Specifically, claim 15 now particularly points out and describes a microporous membrane comprised of about 2% to about 50% by weight of a tackifier. Claim 16 now particularly points out and describes a microporous membrane comprising filler in an amount of about 2% to about 50% of the membrane by weight. Claim 22 now particularly points out and describes a battery wherein the hot-melt adhesive is poly(ethylene-vinyl acetate) having a weight content of vinyl acetate from about 25% to about 90%, and from about 75% to about 10% weight of ethylene. Claim 23 now particularly points out and describes a battery wherein the hot-melt adhesive is poly(ethylene-alkyl acrylate) having a weight content of alkyl acrylate from about 10% to about 30% and a weight content of ethylene from about 90% to about 70%. Since the Applicant's invention is now particularly pointed out and described the Examiner is respectfully requested to withdraw the rejection.

Rejections under 35 USC § 102

The subject matter of claims 14, 21-22 and 24 is alleged to be anticipated by the disclosure of Shinomura '148.

The Applicant respectfully highlights to the Examiner that Claim 14 is now amended to require a battery comprising a homogeneous microporous membrane comprising a filler having an average particle size of less than about 50 μ m. Claims 21-22 and 24 each depend from claim 14. Since the disclosure of Shinomura '148 does not suggest, contemplate, or describe a microporous membrane comprising a filler having an average particle size of less than about 50 μ m, the now defined subject matter of claim 14 cannot be anticipated as a matter of law. Accordingly, the Examiner is respectfully requested to withdraw the rejections.

Rejections under 35 USC §103

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. The

battery of claim 15 now requires a microporous membrane comprising a tackifier, in an amount of about 2% to about 50% by weight, selected from the group consisting of a hydrocarbon resin and poly(vinylidene fluoride-hexafluoropropene) and a filler having an average particle size of less than about 50 μ m. However, in sharp contrast to the assertion of the Examiner, the teachings of Adachi are applied to solid electrolyte (rather than a microporous separator membrane (the Adachi solid electrolyte is dense but not porous)), i.e., solid electrolyte powder and insulating elastomer only. Moreover, Xue discloses PVdF-HFP as a binding polymer for electrode and separator, but does not teach a membrane which comprises an engineering plastics. Furthermore, since the primary reference relied upon by the Examiner, Shinomura '148, issued twenty four (24) years ago, and all four (4) of the references cited, even when tenuously combined do not specifically teach, suggest, or provide incentive to make the combination of elements to solve the problem addressed by the Applicant, the Applicant's claimed invention cannot be obvious as a matter of law. *Ruiz v. Chance*, Fed. Cir. 03-1333, Decided January 29, 2004. The Examiner is respectfully requested to withdraw the rejection.

The battery of claim 16 now requires a homogeneous microporous membrane comprising a filler having an average particle size of less than about 50 μ m and in an amount of about 2% to about 50% of the membrane by weight. Shinomura '148 (issued over 24 years ago) does not suggest, contemplate, or describe a microporous membrane comprising a filler having an average particle size of less than about 50 μ m. Moreover, the teachings of Sheibley discloses a separator is made by coating a porous substrate such as sheets or mats of asbestos with a battery separator composition. The resulting membrane has various compositions e.g. on top, bottom and middle section of the membrane, i.e., not a homogeneous membrane. The Examiner is respectfully requested to withdraw the rejection.

The battery of claim 23 now requires a homogeneous microporous membrane comprising a filler having an average particle size of less than about 50 μ m and poly(ethylene-alkyl acrylate) hot-melt adhesive having a weight content of alkyl acrylate from about 10% to about 30%, and from about 90% to about 70% weight of ethylene. The Examiner alleges that Shinomura '148 (issued over 24 years ago) combined with Dermody '334 (issued 32 years ago) render the Applicant's claimed invention obvious. The Applicant respectfully points out that these disclosures have been published for almost a quarter century, yet no one skilled in the art has combined the disclosures to

reach the subject matter of the instant invention. Indeed, the references cited, even when tenuously combined do not specifically teach, suggest, or provide incentive to make the combination of elements to solve the problem addressed by the Applicant. The Examiner is respectfully requested to withdraw the rejection.

The battery of claim 25, in sharp contrast to the disclosure of Shinomura and Adachi, now requires a microporous membrane comprising a hydrocarbon resin tackifier in an amount of about 2% to about 50% of the membrane by weight. Adachi merely discloses solid electrolyte (rather than a microporous separator membrane) comprising solid electrolyte powder and insulating elastomer. Radovavic does not teach the use of either engineering plastic or hot melt adhesive (the polymers disclosed are melt-processible polymers). EP' 617 discloses a separator having distinct layers, i.e., not uniform. The combination of the references cited by the Examiner do not teach a battery comprising a membrane defined by the instant claims having a hydrocarbon resin tackifier in an amount of about 2% to about 50% of the membrane by weight -or- battery performance comparable to the performance of embodiments within the instant written description. The Examiner is respectfully requested to withdraw the rejection.

The Examiner has further rejected the subject matter of claims 14, 17-21 and 25 as obvious over EP '796 in view of Adachi '317. The Applicant respectfully highlights to the Examiner that Claim 14 is now amended to require a battery comprising a homogeneous microporous membrane comprising a filler having an average particle size of less than about 50 μ m. Claims 17-21 each depend from claim 14. Since the disclosure of EP '796 or Adachi '317 does not suggest, contemplate, or describe a homogeneous microporous membrane comprising a filler having an average particle size of less than about 50 μ m, the now defined subject matter of claim 14 cannot be obvious as a matter of law. The battery of Claim 25 requires a homogeneous microporous membrane comprising a hydrocarbon resin tackifier in an amount of about 2% to about 50% of the membrane by weight. Accordingly, in view of the amendments to the claims presented herewith, the Examiner is respectfully requested to withdraw the rejections.

None of the references cited by the Examiner disclose the limitations now required by claim 15, i.e., a homogeneous microporous membrane comprising (a) a hot-melt adhesive, (b) an engineering plastics, a tackifier, in an amount of about 2% to about 50% by weight, selected from the group consisting of a hydrocarbon resin and poly(vinylidene fluoride-hexafluoropropene), and a

filler having an average particle size of less than about 50 μ m. Accordingly, in view of the amendments to the claims presented herewith, the Examiner is respectfully requested to withdraw the rejection.

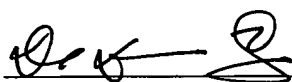
Regarding the rejection to claim 16, Sheibley discloses a separator made by coating a porous substrate such as sheets or mats of asbestos with a battery separator composition. The resulting membrane, however, has various compositions on top, bottom, and a middle section of the membrane, i.e., not a homogeneous membrane, as required by the language of the instant claim. Adachi merely discloses solid electrolyte (rather than a microporous separator membrane) comprising solid electrolyte powder and insulating elastomer. Accordingly, the subject matter of claim 16 and the superior results demonstrated in the instant written description cannot be obvious as a matter of law. Accordingly, in view of the amendments to the claims presented herewith, the Examiner is respectfully requested to withdraw the rejections.

For all the foregoing reasons, the Applicants submit that claims 14-25 are in condition for allowance. Early action toward this end is courteously solicited. The Examiner is kindly encouraged to telephone the undersigned in order to expedite any detail of the prosecution.

It is believed that no fee is required. The Commissioner is authorized to charge any deficiency or credit any overpayment to Deposit Account No. 13-2165.

Respectfully submitted,

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